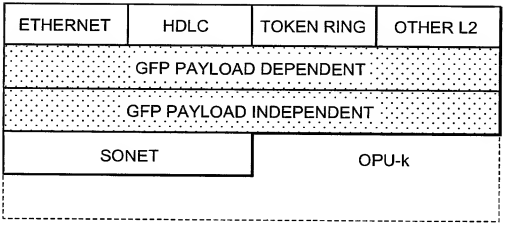
ETHERNET
HDLC
TOKEN RING
OTHER L2
GFP PAYLOAD DEPENDENT
GFP PAYLOAD INDEPENDENT
SONET
OPU-k

Fig.1

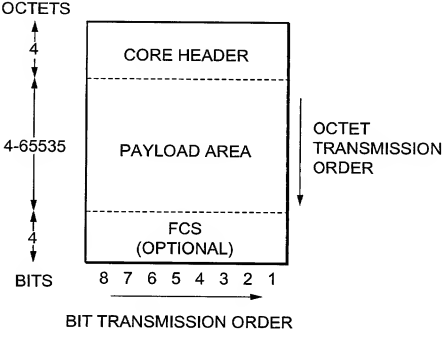
OCTETS
4
4-65535
4
CORE HEADER
PAYLOAD AREA
FCS
(OPTIONAL)
OCTET
TRANSMISSION
ORDER
BITS
8 7 6 5 4 3 2 1
BIT TRANSMISSION ORDER

Fig.2

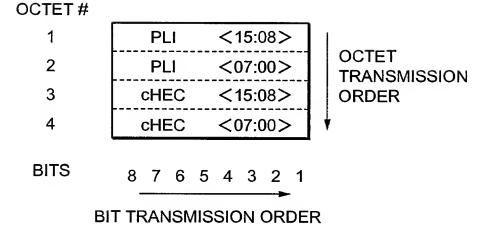
OCTET #
1
2
3
4
PLI <15:08>
PLI <07:00>
cHEC <15:08>
cHEC <07:00>
OCTET TRANSMISSION ORDER
BITS
8 7 6 5 4 3 2 1
BIT TRANSMISSION ORDER

Fig.3

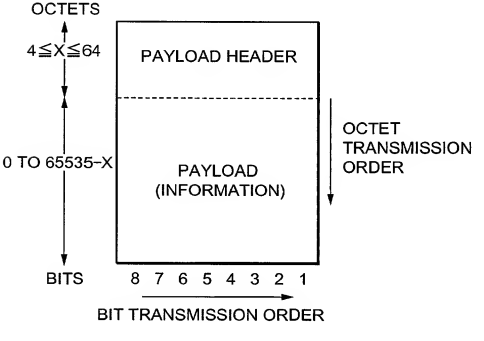
OCTETS
4≦X≦64
PAYLOAD HEADER
0 TO 65535−X
PAYLOAD (INFORMATION)
OCTET TRANSMISSION ORDER
BITS
8 7 6 5 4 3 2 1
BIT TRANSMISSION ORDER

Fig.4

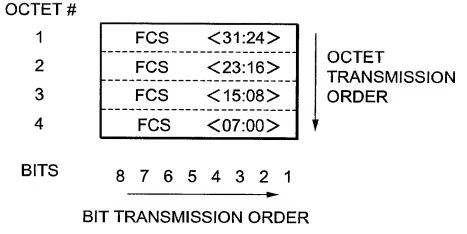
OCTET #
1
2
3
4
FCS <31:24>
FCS <23:16>
FCS <15:08>
FCS <07:00>
OCTET TRANSMISSION ORDER
BITS
8 7 6 5 4 3 2 1
BIT TRANSMISSION ORDER

Fig.5

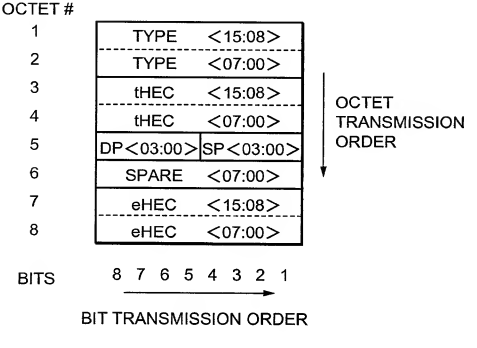
OCTET #
1
2
3
4
5
6
7
8
TYPE <15:08>
TYPE <07:00>
tHEC <15:08>
tHEC <07:00>
DP<03:00>
SP<03:00>
SPARE <07:00>
eHEC <15:08>
eHEC <07:00>
OCTET TRANSMISSION ORDER
BITS
8 7 6 5 4 3 2 1
BIT TRANSMISSION ORDER

Fig.6

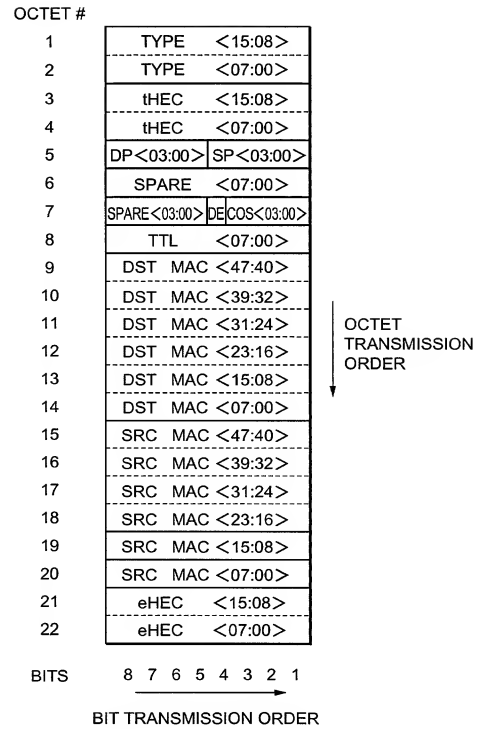
OCTET #
1 TYPE <15:08>
2 TYPE <07:00>
3 tHEC <15:08>
4 tHEC <07:00>
5 DP<03:00> SP<03:00>
6 SPARE <07:00>
7 SPARE<03:00> DE COS<03:00>
8 TTL <07:00>
9 DST MAC <47:40>
10 DST MAC <39:32>
11 DST MAC <31:24>
12 DST MAC <23:16>
13 DST MAC <15:08>
14 DST MAC <07:00>
15 SRC MAC <47:40>
16 SRC MAC <39:32>
17 SRC MAC <31:24>
18 SRC MAC <23:16>
19 SRC MAC <15:08>
20 SRC MAC <07:00>
21 eHEC <15:08>
22 eHEC <07:00>
OCTET TRANSMISSION ORDER
BITS 8 7 6 5 4 3 2 1
BIT TRANSMISSION ORDER

Fig.7

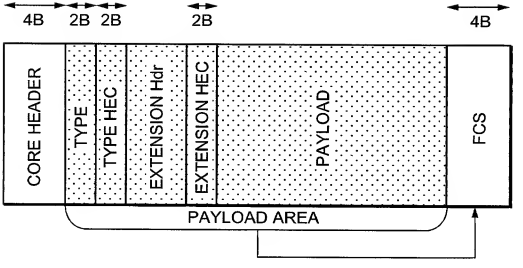

Fig.8

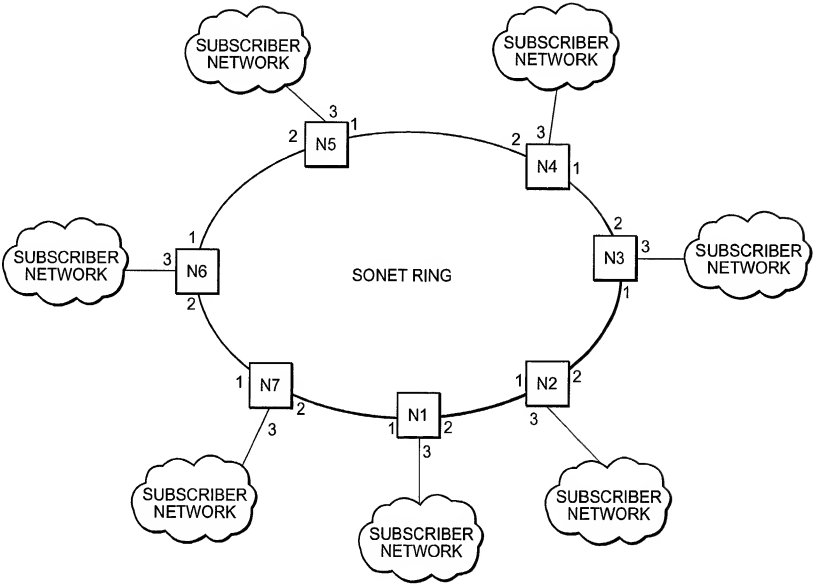
SUBSCRIBER NETWORK
SUBSCRIBER NETWORK
N5
N4
N3
N6
SONET RING
SUBSCRIBER NETWORK
SUBSCRIBER NETWORK
N7
N1
N2
SUBSCRIBER NETWORK
SUBSCRIBER NETWORK
SUBSCRIBER NETWORK

Fig.9

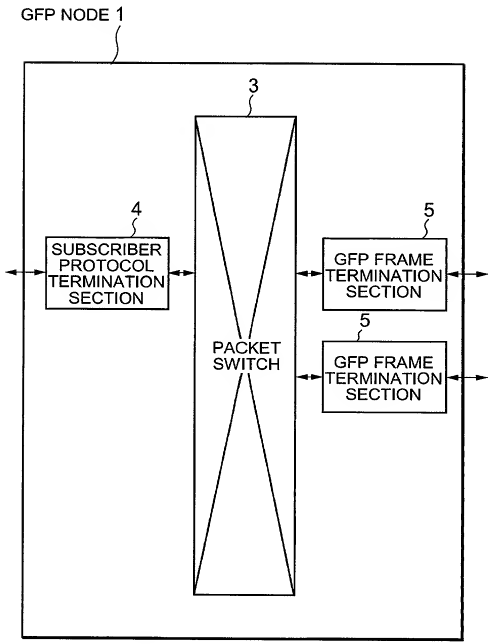
GFP NODE 1
3
4
SUBSCRIBER PROTOCOL TERMINATION SECTION
PACKET SWITCH
5
GFP FRAME TERMINATION SECTION
5
GFP FRAME TERMINATION SECTION

Fig.10

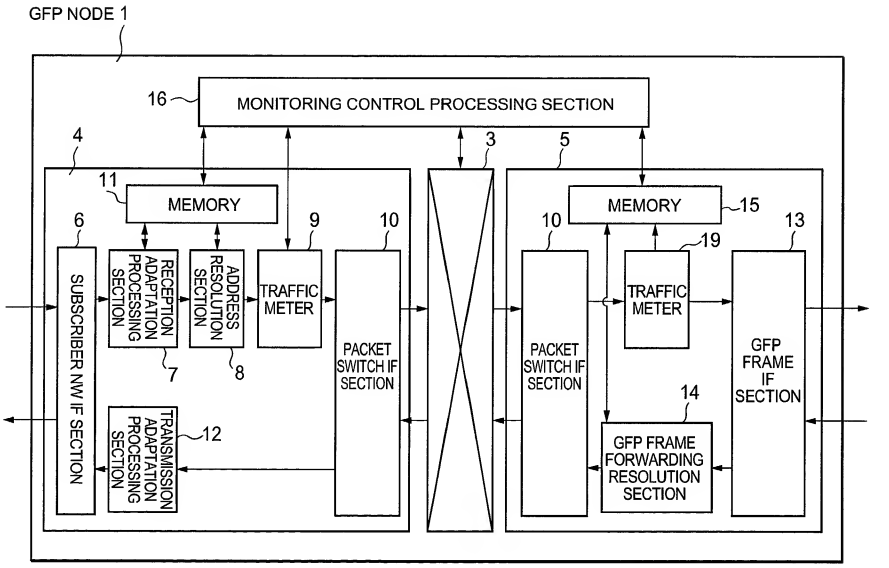
GFP NODE 1
16
MONITORING CONTROL PROCESSING SECTION
4
3
5
11
MEMORY
MEMORY
15
6
9
10
10
13
19
SUBSCRIBER NW IF SECTION
RECEPTION ADAPTATION PROCESSING SECTION
ADDRESS RESOLUTION SECTION
TRAFFIC METER
PACKET SWITCH IF SECTION
PACKET SWITCH IF SECTION
TRAFFIC METER
GFP FRAME IF SECTION
7
8
14
TRANSMISSION ADAPTATION PROCESSING SECTION
12
GFP FRAME FORWARDING RESOLUTION SECTION

Fig.11

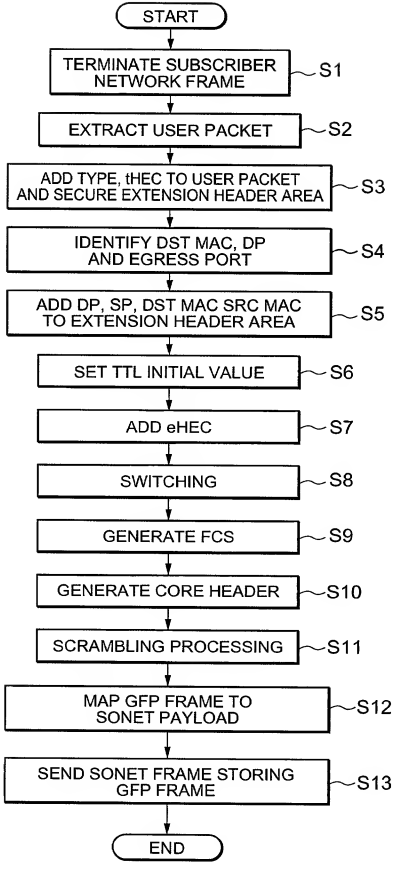

Fig.12

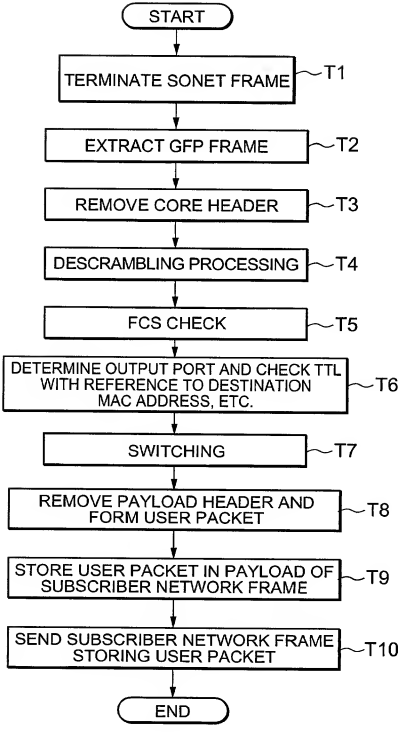

Fig.13

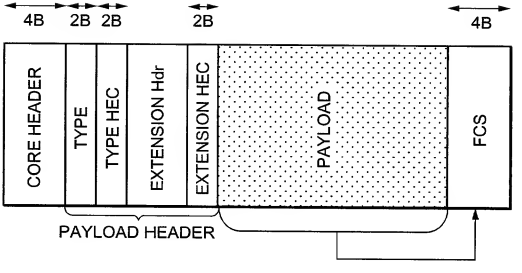
4B
2B
2B
2B
4B
CORE HEADER
TYPE
TYPE HEC
EXTENSION Hdr
EXTENSION HEC
PAYLOAD
FCS
PAYLOAD HEADER

Fig.14

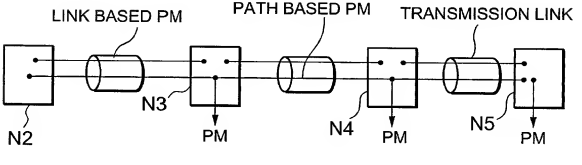
LINK BASED PM
PATH BASED PM
TRANSMISSION LINK
N2
N3
PM
N4
PM
N5
PM

Fig.15

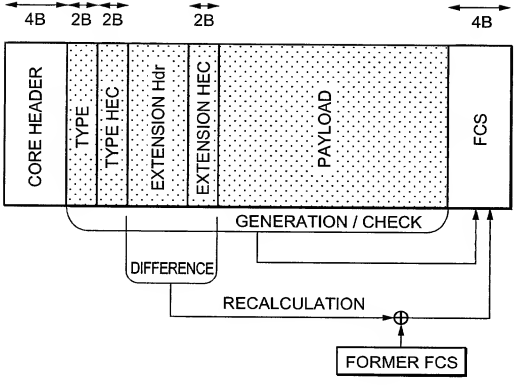
4B
2B
2B
2B
4B
CORE HEADER
TYPE
TYPE HEC
EXTENSION Hdr
EXTENSION HEC
PAYLOAD
FCS
GENERATION / CHECK
DIFFERENCE
RECALCULATION
FORMER FCS

Fig.16

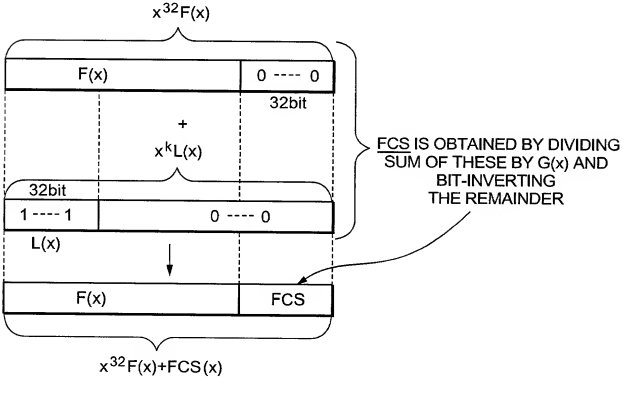
x32F(x)
F(x)
0 ---- 0
32bit
+
xkL(x)
32bit
1 ---- 1
0 ---- 0
L(x)
F(x)
FCS
x32F(x)+FCS(x)
FCS IS OBTAINED BY DIVIDING SUM OF THESE BY G(x) AND BIT-INVERTING THE REMAINDER

Fig.17

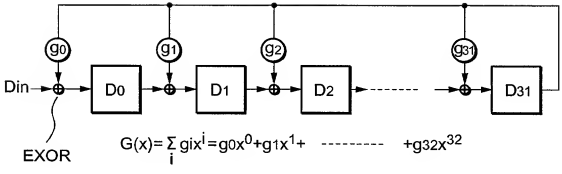

Fig.18

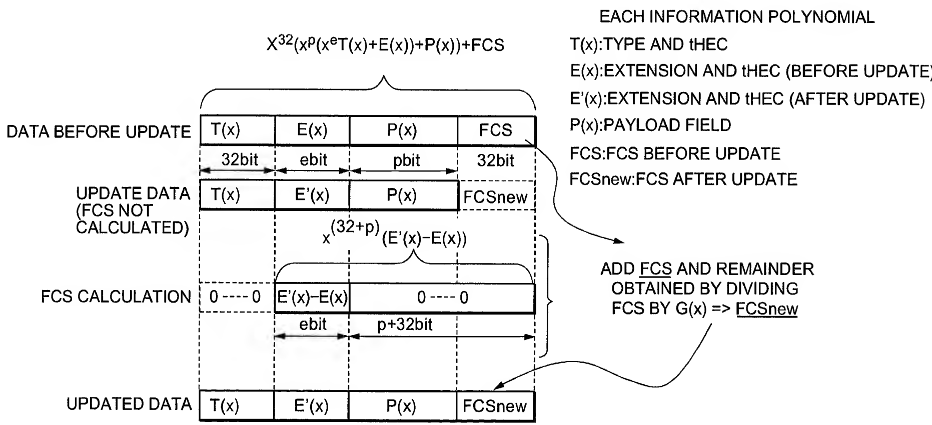
X32(xp(xeT(x)+E(x))+P(x))+FCS
DATA BEFORE UPDATE
T(x)
E(x)
P(x)
FCS
32bit
ebit
pbit
32bit
UPDATE DATA (FCS NOT CALCULATED)
T(x)
E'(x)
P(x)
FCSnew
x(32+p)(E'(x)−E(x))
FCS CALCULATION
0 ---- 0
E'(x)−E(x)
0 ---- 0
ebit
p+32bit
UPDATED DATA
T(x)
E'(x)
P(x)
FCSnew
EACH INFORMATION POLYNOMIAL
T(x):TYPE AND tHEC
E(x):EXTENSION AND tHEC (BEFORE UPDATE)
E'(x):EXTENSION AND tHEC (AFTER UPDATE)
P(x):PAYLOAD FIELD
FCS:FCS BEFORE UPDATE
FCSnew:FCS AFTER UPDATE
ADD FCS AND REMAINDER OBTAINED BY DIVIDING FCS BY G(x) => FCSnew

Fig.19

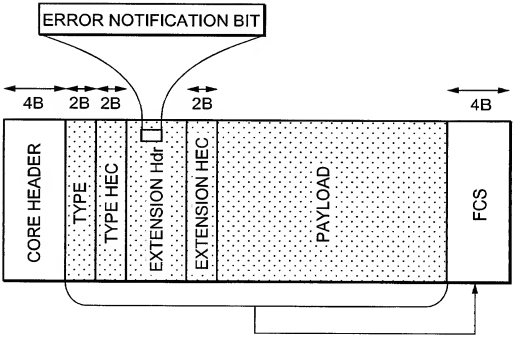
ERROR NOTIFICATION BIT
4B
2B
2B
2B
4B
CORE HEADER
TYPE
TYPE HEC
EXTENSION Hdr
EXTENSION HEC
PAYLOAD
FCS

Fig.20

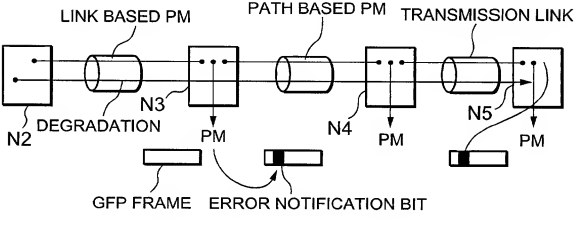
LINK BASED PM
PATH BASED PM
TRANSMISSION LINK
N2
DEGRADATION
N3
PM
N4
PM
N5
PM
GFP FRAME
ERROR NOTIFICATION BIT

Fig.21